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REMARKS

Claims 1-20 are pending herein.

Claims 1-20 are rejected.

Claim 9 is currently amended.

Claim Rejections under 35 U.S.C. 102

Claims 1, 3, 5, 7 and 9 were rejected under 35 U.S.C. 102(b) as being anticipated by Okudaira et al. (U.S. Pat. No. 5,705,029).

It is respectfully submitted that Okudaira et al. fails to anticipate claims 1, 3, 5, 7 and 9 under 35 U.S.C. 102(b), as will be hereinafter set forth.

Okudaira et al. fails to disclose invention of claims 1, 3, 5 and 7

It is respectfully submitted that Okudaira et al. fails to disclose a method comprising "...*circulating* a main coolant fluid...through [a] substrate support; and *circulating* a compensation coolant fluid...through the substrate support...", as set forth in claim 1 and defined by claims 3, 5 and 7 as dependent from claim 1.

It is respectfully submitted that Okudaira et al. discloses that the main cooling fluid (cooling gas) is discharged from the substrate support at the backside of a wafer (2), as shown in Fig. 3 of Okudaira et al., rather than being *circulated* through the circulate support, as required by claims 1, 3, 5 and 7 of the present application.

Therefore, it is respectfully submitted that Okudaira et al. fails to anticipate claims 1, 3, 5 and 7 under 35 U.S.C. 102(b). Reconsideration and allowance of claims 1, 3, 5 and 7 is therefore respectfully solicited.

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Okudaira et al. fails to disclose invention of claim 9

It is respectfully submitted that Okudaira et al. fails to disclose a method comprising "*circulating* [a] main coolant through...the substrate support...*circulating* [a] compensation coolant fluid...through...the substrate support".

As was set forth herein above, it is respectfully submitted that Okudaira et al. discloses that the main cooling fluid (cooling gas) is discharged from the substrate support at the backside of a wafer (2), as shown in Fig. 3 of Okudaira et al., rather than being *circulated* through the circulate support, as required by claim 9 of the present application.

Furthermore, it is respectfully submitted that Okudaira et al. fails to discloses a method comprising "...providing a network of main coolant channels and a network of compensation coolant channels in [a] substrate support", as set forth in amended claim 9.

Therefore, it is respectfully submitted that Okudaira et al. fails to anticipate claim 9 under 35 U.S.C. 102(b). Reconsideration and allowance of claim 9 is therefore respectfully solicited.

Claims 1, 9 and 15 were rejected under 35 U.S.C. 102(e) as being anticipated by Nagaiwa et al. (U.S. Pat. No. 6,723,202).

It is respectfully submitted that Nagaiwa et al. fails to anticipate claims 1, 9 and 15 under 35 U.S.C. 102(e), as will be hereinafter set forth.

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Nagaiwa et al. fails to disclose invention of claim 1

It is respectfully submitted that Nagaiwa et al. fails to disclose a method comprising "circulating a main *coolant* fluid...through [a] substrate support; and circulating a compensation *coolant* fluid having a cooling temperature lower than said set point temperature through the substrate support", as set forth in claim 1.

In contrast, Nagaiwa et al. discloses distributing a coolant through a coolant flow path (11C) in addition to distributing a *heat transfer medium gas* through a gas passage (9) and discharging the heat transfer medium gas against the backside of a wafer (W), as set forth in col. 4, lines 21-26 of Nagaiwa et al.

Therefore, it is respectfully submitted that Nagaiwa et al. fails to anticipate claim 1 under 35 U.S.C. 102(e). Reconsideration and allowance of claim 1 is therefore respectfully solicited.

Nagaiwa et al. fails to disclose invention of claims 9 and 15

It is respectfully submitted that Nagaiwa et al. fails to disclose a method comprising "...circulating a main *coolant* through...the substrate support at the set point temperature...circulating [a] compensation *coolant* fluid...through...the substrate support at a cooling temperature lower than said set point temperature", as set forth in claim 9 and defined by claim 15 as dependent therefrom, for the same reasons as were set forth hereinabove with respect to the rejection of claim 1.

Furthermore, it is respectfully submitted that Nagaiwa et al. fails to disclose a method comprising "...providing a network of main coolant channels and a network of

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compensation coolant channels in [a] substrate support", as set forth in amended claim 9 and defined by claim 15 as dependent therefrom.

Therefore, it is respectfully submitted that Nagaiwa et al. fails to anticipate claims 9 and 15 under 35 U.S.C. 102(e). Reconsideration and allowance of claims 9 and 15 is therefore respectfully solicited.

Claim Rejections under 35 U.S.C. 103

Claims 2, 4, 6, 8, 10 and 12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Okudaira et al.

It is respectfully submitted that Okudaira et al. fails to render claims 2, 4, 6, 8, 10 and 12 obvious within the contemplation of 35 U.S.C. 103(a) since Okudaira et al. fails to teach or suggest all of the limitations of claim 1, from which claims 2, 4, 6 and 8 depend; and claim 9, from which claims 10 and 12 depend, as will be hereinafter set forth.

Okudaira et al. fails to teach invention of claims 2, 4, 6 and 8

It is respectfully submitted that Okudaira et al. fails to teach or suggest a method comprising "...*circulating* a main coolant fluid...through [a] substrate support; and *circulating* a compensation coolant fluid...through the substrate support...", as set forth in claim 1, and therefore, defined by claims 2, 4, 6 and 8 as dependent from claim 1.

It is respectfully submitted that Okudaira et al. teaches that a main cooling fluid (cooling gas) is discharged from the substrate support at the backside of a wafer (2), as shown in Fig. 3 of Okudaira et al., rather than being circulated through the circulate support, as required by claims 2, 4, 6 and 8 of the present application.

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Therefore, it is respectfully submitted that Okudaira et al. fails to anticipate claims 2, 4, 6 and 8 under 35 U.S.C. 102(b). Reconsideration and allowance of claims 2, 4, 6 and 8 is therefore respectfully solicited.

Okudaira et al. fails to teach invention of claims 10 and 12

It is respectfully submitted that Okudaira et al. fails to teach or suggest a method comprising "...circulating a main *coolant* through...[a] substrate support at the set point temperature...circulating [a] compensation *coolant* fluid...through...the substrate support at a cooling temperature lower than said set point temperature", as set forth in claim 9, and therefore, defined by claims 10 and 12 as dependent therefrom, for the same reasons as were set forth hereinabove with respect to the rejection of claims 2, 4, 6 and 8.

Furthermore, it is respectfully submitted that Okudaira et al. fails to teach or suggest a method comprising "...providing a network of main coolant channels and a network of compensation coolant channels in [a] substrate support", as set forth in claim 9, and therefore, defined by claims 10 and 12 as dependent therefrom.

Therefore, it is respectfully submitted that Okudaira et al. fails to render claims 10 and 12 obvious under 35 U.S.C. 103(a). Reconsideration and allowance of claims 10 and 12 is therefore respectfully solicited.

Claims 10 and 12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Nagaiwa et al.

Claims 10 and 12 depend from claim 9, and therefore, incorporate all of the limitations of claim 9.

It is respectfully submitted that Nagaiwa et al. fails to teach or suggest a method

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comprising "...circulating a main *coolant* through...the substrate support at the set point temperature...circulating [a] compensation *coolant* fluid...through...the substrate support at a cooling temperature lower than said set point temperature", as set forth in claim 9, and therefore, defined by claims 10 and 12 as dependent from claim 9.

In contrast, Nagaiwa et al. teaches distributing a coolant through a coolant flow path (reference numeral 11C in the Nagaiwa et al. patent) in addition to distributing a *heat transfer medium gas* through a gas passage (9) and discharging the heat transfer medium gas against the backside of a wafer (W), as set forth in col. 4, lines 21-26 of Nagaiwa et al.

Furthermore, it is respectfully submitted that Nagaiwa et al. fails to teach or suggest a method comprising "...providing a network of main coolant channels and a network of compensation coolant channels in [a] substrate support", as set forth in amended claim 9.

Therefore, it is respectfully submitted that Nagaiwa et al. fails to render claims 10 and 12, as dependent from claim 9, under 35 U.S.C. 103(a). Reconsideration and allowance of claims 10 and 12 is therefore respectfully solicited.

Claims 7 and 11 were rejected under 35 U.S.C. 103(a) as being unpatentable over Okudaira et al. or Nagaiwa et al. in view of Hideo et al. (JP 2003-248322).

It is respectfully submitted that Okudaira et al. or Nagaiwa et al. in view of Hideo et al. fails to render claims 7 and 11 under 35 U.S.C. 103(a), as will be hereinafter set forth.

Okudaira et al. or Nagaiwa et al. in view of Hideo et al. fails to teach invention of claim 7

Claim 7 depends from claim 1, and therefore, incorporates all of the limitations of

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claim 1.

It is respectfully submitted that Okudaira et al. or Nagaiwa et al. in view of Hideo et al. fails to teach or suggest a method comprising "...*circulating* a main *coolant* fluid...through [a] substrate support; and *circulating* a compensation *coolant* fluid...through the substrate support...", as set forth in claim 1, and therefore, defined by claim 7 as dependent from claim 1.

As was set forth herein above, Okudaira et al. teaches that a main cooling fluid (cooling gas) is discharged from the substrate support at the backside of a wafer (2), as shown in Fig. 3 of Okudaira et al., rather than being circulated through the circulate support, as required by claims 1 and 7 of the present application.

Nagaiwa et al. teaches distributing a coolant through a coolant flow path (11C) in addition to distributing a *heat transfer medium* gas through a gas passage (9) and discharging the heat transfer medium gas against the backside of a wafer (W), as set forth in col. 4, lines 21-26 of Nagaiwa et al.

Hideo et al. fails to teach or suggest the limitations set forth in claim 1, and therefore, claim 7 as dependent therefrom, either alone or in combination with Okudaira et al. and Nagaiwa et al.

Therefore, it is respectfully submitted that Okudaira et al. or Nagaiwa et al. in view of Hideo et al. fails to render claim 7, as dependent from claim 1, under 35 U.S.C. 103(a). Reconsideration and allowance of claim 7 is therefore respectfully solicited.

Okudaira et al. or Nagaiwa et al. in view of Hideo et al. fails to teach invention of claim

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Claim 11 depends from claim 9, and therefore, incorporates all of the limitations of claim 9.

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It is respectfully submitted that Okudaira et al. or Nagaiwa et al. in view of Hideo et al. fails to teach or suggest a method comprising "...*circulating* a main coolant through...[a] substrate support at the set point temperature...*circulating* {a} compensation coolant fluid...through...the substrate support at a cooling temperature lower than said set point temperature", as set forth in claim 9, and therefore, defined by claim 11 as dependent therefrom, for the same reasons as were set forth hereinabove with respect to the rejection of claim 7.

Furthermore, it is respectfully submitted that Okudaira et al. fails to teach or suggest a method comprising "...providing a network of main coolant channels and a network of compensation coolant channels in [a] substrate support", as set forth in claim 9, and therefore, defined by claim 11 as dependent therefrom.

Furthermore, it is respectfully submitted that Okudaira et al. or Nagaiwa et al. in view of Hideo et al. fails to teach or suggest a method comprising "...providing a network of main coolant channels and a network of compensation coolant channels in [a] substrate support", as set forth in amended claim 9, and therefore, defined by claim 11 as dependent therefrom.

Therefore, it is respectfully submitted that Okudaira et al. or Nagaiwa et al. in view of Hideo et al. fails to render claim 11, as dependent from claim 9, under 35 U.S.C. 103(a). Reconsideration and allowance of claim 11 is therefore respectfully solicited.

Claim 16 was rejected under 35 U.S.C. 103(a) as being unpatentable over Nagaiwa et al. in view of Okudaira et al.

Claim 16 depends from claim 9, and therefore, incorporates all of the limitations of claim 9.

As was set forth herein above, neither Nagaiwa et al. nor Okudaira et al. teaches

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or suggest the limitations of claim 9, and therefore, claim 16 as dependent therefrom.

Therefore, it is respectfully submitted that Nagaiwa et al. in view of Okudaira et al. fails to teach or suggest the limitations of claim 9, and therefore, claim 16 as dependent therefrom.

Accordingly, it is respectfully submitted that Nagaiwa et al. In view of Okudaira et al. fails to render claim 16, as dependent from claim 9, obvious under 35 U.S.C. 103(a). Reconsideration and allowance of claim 16 is therefore respectfully solicited.

Claims 13, 14 and 17-20 were rejected under 35 U.S.C. 103(a) as being unpatentable over Nagaiwa et al. or Okudaira et al. in view of Long et al. (U.S. Pat. No. 6,608,352).

It is respectfully submitted that Nagaiwa et al. or Okudaira et al. in view of Long et al. fails to render claims 13, 14 and 17-20 under 35 U.S.C. 103(a), as will be hereinafter set forth.

Nagaiwa et al. or Okudaira et al. in view of Long et al. fails to teach invention of claims 13 and 14

Claims 13 and 14 depend from claim 9, and therefore, incorporate all of the limitations of claim 9.

As was set forth herein above, neither Nagaiwa et al. nor Okudaira et al. teaches or suggest all of the limitations of claim 9, and therefore, claims 13 and 14 as dependent from claim 9.

Long et al. fails to teach or suggest a method comprising "...circulating a main coolant through...[a] substrate support at the set point temperature...circulating [a] compensation coolant fluid...through...the substrate support at a cooling temperature

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lower than said set point temperature", as set forth in claim 9, and therefore, defined by claims 13 and 14 as dependent therefrom.

Therefore, it is respectfully submitted that Long et al. would fail to provide any teaching, suggestion or motivation to a person of ordinary skill in the art to modify the method of Nagaiwa et al. or Okudaira et al. in the manner required by the limitations of claims 13 and 14.

In the Office action, it was stated, "Long et al. teaches a chuck 208 coupled to a temperature controller 210 a p-n junction current meter 214 is coupled between the p-n junction formed by the first doped region 204 and the drain region 156, see col. 6 lines 9-48".

However, Nagaiwa et al. or Okudaira et al. in view of Long et al. fails to teach or suggest adapting a P/N junction in such a manner as to sense a temperature of a substrate support and control flow of a compensation coolant through the substrate support by operation of the P/N junction, as required by claims 13 and 14.

Accordingly, it is respectfully submitted that Nagaiwa et al. or Okudaira et al. in view of Long et al. fails to render claims 13 and 14 obvious under 35 U.S.C. 103(a). Reconsideration and allowance of claims 13 and 14 is therefore respectfully solicited.

Nagaiwa et al. or Okudaira et al. in view of Long et al. fails to teach invention of claims 17-20

In the Office action, it was stated, "Regarding claim 17: A main temperature characteristic curve is seen in Fig. 5. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to modify the method of Nagaiwa et al. or Okudaira et al. to provide a pn junction module to determine the thermal resistance of the substrate and thus enhance process control".

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However, it is respectfully submitted that Fig. 5 of Long et al. is a current versus temperature characteristic curve of a pn junction, rather than a main temperature characteristic curve or a temperature compensation characteristic curve of a substrate support in a reaction chamber, as set forth in claim 17.

While Long et al. teaches the use of a P/N junction to determine the thermal resistance of a field effect transistor, both Okudaira et al. and Nagaiwa et al. fail to teach or suggest modifying the P/N junction of Long et al. in such a manner as to "maintain a substrate support at a set point temperature in a reaction chamber upon a rise in temperature of the chamber", as set forth in claims 17-20.

Accordingly, it is respectfully submitted that Nagaiwa et al. or Okudaira et al. in view of Long et al. fails to render claims 17-20 obvious under 35 U.S.C. 103(a). Reconsideration and allowance of claims 17-20 is therefore respectfully solicited.

Conclusion

Every effort has been made to amend applicant's claims in order to define his invention in the scope to which it is entitled. Accordingly, reconsideration and allowance of claims 1-20 is respectfully solicited.

Respectfully submitted,

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